

Cold Spring Harbor, NY. The expression of the 52906, 33408, or 12189 polypeptide is detected by radiolabelling ( $^{35}\text{S}$ -methionine or  $^{35}\text{S}$ -cysteine available from NEN, Boston, MA, can be used) and immunoprecipitation (Harlow, E. and Lane, D. (1988) *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY) using an HA specific monoclonal antibody. Briefly, the cells are labeled for 8 hours with  $^{35}\text{S}$ -methionine (or  $^{35}\text{S}$ -cysteine). The culture media are then collected and the cells are lysed using detergents (RIPA buffer, 150 mM NaCl, 1% NP-40, 0.1% SDS, 0.5% DOC, 50 mM Tris, pH 7.5). Both the cell lysate and the culture media are precipitated with an HA specific monoclonal antibody. Precipitated polypeptides are then analyzed by SDS-PAGE.

Alternatively, DNA containing the 52906, 33408, or 12189 coding sequence is cloned directly into the polylinker of the pCDNA/Amp vector using the appropriate restriction sites. The resulting plasmid is transfected into COS cells in the manner described above, and the expression of the 52906, 33408, or 12189 polypeptide is detected by radiolabelling and immunoprecipitation using a 52906, 33408, or 12189 specific monoclonal antibody.

#### Equivalents

Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following claims.

What is claimed is:

1. An isolated nucleic acid molecule selected from the group consisting of:  
a) a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:3, at least 95% identical to the nucleotide sequence of SEQ ID NO:4, or at least 90% identical to the nucleotide sequence of SEQ ID NO:7;

b) a nucleic acid molecule comprising a fragment of at least 1750 nucleotides of the nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:3, at least 2980 nucleotides of the nucleotide sequence of SEQ ID NO:4, or at least 300 nucleotides of the nucleotide sequence of SEQ ID NO:7;

c) a nucleic acid molecule which encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8;

d) a nucleic acid molecule which encodes a fragment of a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the fragment comprises at least 580 contiguous amino acids of SEQ ID NO:2 or at least 80 contiguous amino acids of SEQ ID NO:8; and

e) a nucleic acid molecule which encodes a naturally occurring allelic variant of a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the nucleic acid molecule hybridizes to a nucleic acid molecule comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:7, or a complement thereof, under stringent conditions.

2. The isolated nucleic acid molecule of claim 1, which is selected from the group consisting of:

a) a nucleic acid comprising the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:7; and

b) a nucleic acid molecule which encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8.

3. The nucleic acid molecule of claim 1, further comprising a vector nucleic acid sequence.

4. The nucleic acid molecule of claim 1, further comprising a nucleic acid sequence encoding a heterologous polypeptide.

5. A host cell which contains the nucleic acid molecule of claim 1.

6. The host cell of claim 5, which is a mammalian host cell.

7. A non-human mammalian host cell containing the nucleic acid molecule of claim 1.

8. An isolated polypeptide selected from the group consisting of:

a) a polypeptide which is encoded by a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleic acid comprising the nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:3 or at least 90% identical to a nucleic acid comprising the nucleotide sequence of SEQ ID NO:7;

b) a naturally occurring allelic variant of a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:7, or a complement thereof under stringent conditions; and

c) a fragment of a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the fragment comprises at least 580 contiguous amino acids of SEQ ID NO:2 or at least 80 contiguous amino acids of SEQ ID NO:8.

9. The isolated polypeptide of claim 8, comprising the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8.

10. The polypeptide of claim 8, further comprising a heterologous amino acid sequence.

11. An antibody which selectively binds to the polypeptide of claim 8.

12. A method for producing a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the amino acid sequence of SEQ ID NO:2 or  
5 SEQ ID NO:8;
- b) a polypeptide comprising a fragment of the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the fragment comprises at least 580 contiguous amino acids of SEQ ID NO:2 or at least 80 contiguous amino acids of SEQ ID NO:8; and
- c) a naturally occurring allelic variant of a polypeptide comprising the amino  
10 acid sequence of SEQ ID NO:2 or SEQ ID NO:8, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:7, or a complement thereof under stringent conditions;  
the method comprising culturing the host cell of claim 5 under conditions in which the nucleic acid molecule is expressed.

13. A method for detecting the presence of a polypeptide of claim 8 in a sample, comprising:

- a) contacting the sample with a compound which selectively binds to a polypeptide of claim 8; and
- 20 b) determining whether the compound binds to the polypeptide in the sample.

14. The method of claim 13, wherein the compound which binds to the polypeptide is an antibody.

25 15. A kit comprising a compound which selectively binds to a polypeptide of claim 8 and instructions for use.

16. A method for detecting the presence of a nucleic acid molecule of claim 1 in a sample, comprising the steps of:

- a) contacting the sample with a nucleic acid probe or primer which selectively hybridizes to the nucleic acid molecule; and
- b) determining whether the nucleic acid probe or primer binds to a nucleic acid molecule in the sample.

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17. The method of claim 16, wherein the sample comprises mRNA molecules and is contacted with a nucleic acid probe.

18. A kit comprising a compound which selectively hybridizes to a nucleic acid molecule of claim 1 and instructions for use.

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19. A method for identifying a compound which binds to a polypeptide of claim 8 comprising the steps of:

- a) contacting a polypeptide, or a cell expressing a polypeptide of claim 8 with a test compound; and
- b) determining whether the polypeptide binds to the test compound.

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20. The method of claim 19, wherein the binding of the test compound to the polypeptide is detected by a method selected from the group consisting of:

- a) detection of binding by direct detecting of test compound/polypeptide binding;
- b) detection of binding using a competition binding assay;
- c) detection of binding using an assay for 52906 or 12189-mediated signal transduction.

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21. A method for modulating the activity of a polypeptide of claim 8 comprising contacting a polypeptide or a cell expressing a polypeptide of claim 8 with a compound which binds to the polypeptide in a sufficient concentration to modulate the activity of the polypeptide.

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22. A method for identifying a compound which modulates the activity of a polypeptide of claim 8, comprising:

- a) contacting a polypeptide of claim 8 with a test compound; and
- b) determining the effect of the test compound on the activity of the polypeptide to thereby identify a compound which modulates the activity of the polypeptide.

23. A method of treating or preventing an ion flux-related disorder in a subject, the method comprising administering to the subject an agent that modulates the activity or expression of a 52906 or 12189 polypeptide or nucleic acid, in an amount effective to treat or prevent the ion flux-related disorder.

24. The method of claim 23, wherein the agent is a peptide, a phosphopeptide, a small molecule, an antibody, or any combination thereof.

25. The method of claim 23, wherein the agent is an antisense, a ribozyme, a triple helix molecule, a 52906 or 12189 nucleic acid, or any combination thereof.

26. A method for identifying an agent that modulates the activity or expression of a 52906 or 12189 polypeptide or nucleic acid, comprising contacting the 52906 or 12189 polypeptide or nucleic acid with an agent, and determining the effect of the agent on the activity or expression of the polypeptide or nucleic acid.

27. The method of claim 26, wherein the agent is a peptide, a phosphopeptide, a small molecule, an antibody, or any combination thereof.

28. The method of claim 26, wherein the agent is an antisense, a ribozyme, a triple helix molecule, a 52906 or 12189 nucleic acid, or any combination thereof.

29. The method of claim 26, wherein the method comprises determining the effect of the agent on an ion channel activity of the polypeptide.

30. The method of claim 26, wherein the effect of the agent on the activity or expression of the polypeptide or nucleic acid is determined in a neuronal cell or a muscle cell.

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31. An antibody which selectively binds to an extracellular domain of the polypeptide of SEQ ID NO:5.

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